

(19) JAPANESE PATENT OFFICE (JP)
(12) Official Gazette for Unexamined Patent Applications
(A)
(11) Japanese Unexamined Patent Application (Kokai) No.
H10-95481
(43) Disclosure Date: April 14 1998

	<u>Classification</u>	
(51) Int. Cl. ⁶ : Symbols:	FI	
B65D 85/16	B65D 85/16	
A61F 5/44	A61F 5/44	H
// A61F 13/15	A41B 13/02	Z

Request for Substantive Examination: Not yet submitted

Number of Claims: 5

OL (Total of 7 pages [in the original])

(21) Patent Application No.: H8-248066

(22) Filing Date: September 19 1996

(71) Applicant: 000000918

Kao Corp.,
1-14-10 Nihonbashi Kayabacho,
Chuo-ku, Tokyo

(72) Inventor: Mika Narawa

c/o Kao Corp. Research Laboratories,
2606 Akabane, Ichikai-machi,
Haga-gun, Tochigi-ken

(72) Inventor: Shinobu Takei

c/o Kao Corp. Research Laboratories,
2606 Akabane, Ichikai-machi,
Haga-gun, Tochigi-ken

(72) Inventor: Toru Hayase

c/o Kao Corp. Research Laboratories,
2606 Akabane, Ichikai-machi,
Haga-gun, Tochigi-ken

(72) Inventor: Kenji Ando

c/o Kao Corp. Research Laboratories,
2606 Akabane, Ichikai-machi,
Haga-gun, Tochigi-ken

(74) Agent:

Patent Attorney, Osamu Hashima
(and 1 other)

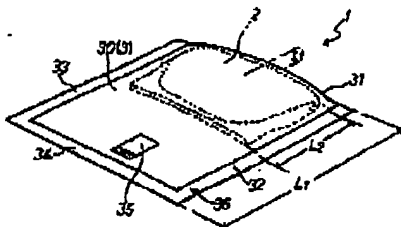
- 2 -

(54) [Title of the Invention] Individual packaging structure for a disposable diaper

(57) [Abstract]

[Object] To provide an individual packaging structure for a disposable diaper that is compact and easily carried, that is simple to put on and, furthermore, that can be hygienically disposed of.

[Constitution] An individual packaging structure for a disposable diaper configured by the individual packaging of a disposable diaper 2 in a packaging material 3, wherein the above-noted packaging material 3 forms an hermetically sealed individual packaging bag 30 in the interior of which the disposable diaper is enclosed, and the above-noted individual packaging bag 30 is formed in such a way that the disposable diaper is maintained in a compressed state in the thickness direction thereof.



- 3 -

[Scope of the Patent Claims]

[Claim 1] An individual packaging structure for a disposable diaper configured by the individual packaging of a disposable diaper in a packaging material,

wherein the above-noted packaging material forms an hermetically sealed individual packaging bag in the interior of which the disposable diaper is enclosed,

and the above-noted individual packaging bag is formed in such a way that the disposable diaper is maintained in a compressed state in the thickness direction thereof.

[Claim 2] The individual packaging structure for a disposable diaper as claimed in claim 1, wherein the above-noted disposable diaper is folded for individually packaging.

[Claim 3] The individual packaging structure for a disposable diaper as claimed in claim 1, wherein the above-noted disposable diaper is a pants-type disposable diaper.

[Claim 4] The individual packaging structure for a disposable diaper as claimed in claim 1, wherein the above-noted packaging material comprises a fixing means that allows it to be resealed when the diaper is to be disposed of.

[Claim 5] A method for the manufacture of the individual packaging structure for a disposable diaper as claimed in claim 1 comprising a sealing step in which, following the covering of the above-noted disposable diaper with the packaging material, said disposable diaper is compressed and/or degassed together with the packaging material and said packaging material is

- 4 -

sealed at prescribed positions.

[Detailed Description of the Invention]

[0001]

[Technology to which the Invention Belongs] The present invention relates to an individual packaging structure for a disposable diaper configured by the individual packaging of a disposable diaper for housing and holding excrement employed by infants, adults and the incontinent in a packaging material, and more specifically refers to an individual packaging structure for a disposable diaper that is compact and has improved hygienic carriability.

[0002]

[Prior Art and Problems to be Solved by the Invention] In addition to the most commonly employed disposable diapers of the prior art which are flat-type disposable diapers (hereafter "flat-type diapers") that comprise a fastening means such as a tape fastener, the use of pants-type disposable diapers (hereafter "pants-type diapers") in which the left and right side edges of a waist side part and the left and right side edges of a back side part of the diaper are bonded to form a left and right pair of leg opening parts and a single waist opening part has become more widespread in recent times.

[0003] Disposable diapers of this type are normally sold in a package comprising a bundle of several folded diapers. A variety of methods for the folding of disposable diapers have hitherto been proposed and, by way of example, a method for the folding

- 5 -

of a flat-type diaper has been proposed in which, following the folding of side flaps that extend along the left and right sides of an absorbent body toward a top sheet side, the diaper is folded in three in such a way as to demarcate it into three sections, that is, a waist side part, a back side part and a crotch part. An additional advantage of this method of folding lies in the fact that the fold creases that remain when the diaper is unfolded for use describe a boat shape in the longitudinal direction of the diaper, that is to say, the diaper describes a shape that conforms to the body shape of the wearer and, accordingly, has good fittability. On the other hand, although there is no generally accepted best method for the folding of a pants-type diaper, a variety of methods for the compact folding of the diaper have been proposed in recent times with a view to improving the carriability thereof, improving the appearance of the diapers in the folded state and, in addition, preventing the diapers from falling over easily in shop display arrangements.

[0004] Incidentally, the principle component of the material normally employed as the absorbent body of a disposable diaper is fluff pulp, and this material also contains a water-absorbent high molecular weight polymer. Fluff pulp, which has a high liquid absorbency, can be acquired comparatively inexpensively and, although it is used in almost all types of disposable diaper, the use of synthetic fibers instead of fluff pulp and the use of fluff pulp in combination with synthetic fibers has

- 6 -

been proposed in recent years.

[0005] The thickness of the above-noted absorbent body is proportionate to the amount of fluff pulp and synthetic fibers that are used. Normally, the thickness of a disposable diaper is to a large extent dependent on the thickness of the absorbent body. This is because attempts to reduce the thickness of the disposable diaper article based on the selection of materials aimed at reducing the thickness of component members other than the absorbent body have little effect. Accordingly, the thickness of a disposable diaper is dependent on the amount of fluff pulp and synthetic fibers from which the absorbent body is configured. The problems inherent to disposable diapers of too large a thickness include not only the ungainly appearance of the disposable diaper when worn by the wearer but also a lack of carriability thereof and, in addition, the associated difficulties in terms of the space occupied by large disposable diapers in both transportation and shop displays. Accordingly, there is keen demand for the development of a disposable diaper in which the thickness thereof is reduced without loss of manufactured article performance.

[0006] Although the reduction of the thickness of a disposable diaper based on a reduction of the amount of fibers used in the absorbent body of the disposable diaper has been considered, there are limits to the extent that the thickness of a disposable diaper can be reduced without loss of performance. In addition, the reduction of the thickness of a diaper based on

- 7 -

the implementation of a press step during the steps for the manufacture of the diaper (said press step constitutes a special step for the compression formation of the absorbent body alone) has been proposed. However, because of the elasticity of fibers, even in an absorbent body compressed using a press the surrounding air permeates the gaps that are generated when the elastic restoration of the fibers occurs and results in the restoration of the thickness of the diaper (increase in thickness) over time. An additional problem inherent thereto lies in the fact that compression of the absorbent body to the extent that elastic restoration is impossible results in an over-hardening of the disposable diaper and dramatically reduces its performance. By way of example, although almost all currently available disposable diapers are compression-packaged, the problem inherent to the use of these diapers lies in the fact that, once they have been taken out of the package and let stand for several hours in a zero load state, the thickness of the diaper expands and the carriability thereof is lowered.

[0007] In addition, a problem inherent to the disposal of used disposable diapers in garbage bins lies in the fact that they are a cause of the unpleasant odor of garbage bins because, even if they are rolled up and compacted, slight odors remain. This problem is even more apparent with pants-type diapers due to the fact that they cannot be properly compacted.

[0008] In summary, the problems inherent to the use of the disposable diapers of the prior art include, because restoration

- 8 -

of the thickness of a diaper occurs once it has been opened, (1) difficulty in putting on the diaper (difficulty in putting the diaper on the wearer), and (2) a lack of carriability and bulkiness, and an additional problem pertains to the fact that they cannot be hygienically disposed of. These problems are more marked when an individual disposable diaper is used in the non-home location. Moreover, when a diaper is used in a non-home location it must on many occasions be carried home. Accordingly, a keen demand currently exists for the development of a disposable diaper (or an individual packaging structure) free of the above-noted problems.

[0009] Accordingly, an object of the present invention is to provide an individual packaging structure for a disposable diaper that is compact and easily carried, that is simple to put on and, furthermore, that can be hygienically disposed of.

[0010]

[Means to Solve the Problems] The above-noted object is achieved using the present invention by the provision of an individual packaging structure for a disposable diaper configured by the individual packaging of a disposable diaper in a packaging material in which the above-noted packaging material forms an hermetically sealed individual packaging bag enclosing the disposable diaper in its interior, and in which the above-noted individual packaging bag is formed in such a way that the disposable diaper is maintained in a compressed state in the thickness direction thereof. In addition, the present invention

- 9 -

provides an individual packaging structure for a disposable diaper in which the above-noted disposable diaper is folded for individual packaging. In addition, the present invention provides an individual packaging structure for a disposable diaper in which the above-noted disposable diaper is a pants-type disposable diaper. The present invention provides an individual packaging structure for a disposable diaper in which the above-noted packaging material comprises a fixing means that allows for it to be resealed when the diaper is to be disposed of. Furthermore, the present invention, as a preferred method for the manufacture of the above-noted packaging structure, provides a method for the manufacture of the individual packaging structure for a disposable diaper in which, following the covering of the above-noted disposable diaper with the packaging material, said disposable diaper is compressed and/or degassed together with the packaging material and said packaging material is sealed at prescribed positions.

[0011]

[Embodiment of the Invention] A detailed description of the individual packaging structure for a disposable diaper of the present invention is given below with reference to the attached diagrams. It should be noted that the example employed for the description of the embodiments given below is a disposable diaper for infants. Here, FIG. 1 is a perspective view showing a first embodiment of an individual packaging structure for a disposable diaper of the present invention, FIG. 2 is a

- 10 -

perspective view of the disposable diaper employed in the packaging structure shown in FIG. 1, and FIG. 3 is an unfolded view of the packaging material employed for the packaging structure shown in FIG. 1.

[0012] The individual packaging structure 1 for a disposable diaper of the embodiment shown in FIG. 1 is configured by the packaging of a disposable diaper 2 in a packaging material 3.

[0013] Here, the disposable diaper 2 employed in the above-noted packaging structure 1 constitutes, as shown in FIG. 2, a pants-type disposable diaper of a well-known configuration in which the left and right side edges of a waist side part 21 and the left and right side edges of a back side part 22 are bonded so as to comprise, at the least, a waist opening part and a pair of leg hole opening parts, and any of the commonly known constituent materials for use for each component member part thereof (constituent materials of, for example, the top sheet, the back sheet, the absorbent body and the elastic member) can be employed in this diaper without particular restriction.

[0014] In addition, the packaging material 3 employed in the above-noted packaging structure 1 describes, as shown in FIG. 3, a rectangular sheet shape folded in two along a folding part 31 along the center in the longitudinal direction so as to form the packaging structure shown in FIG. 1. Plastic films or similar, including polyethylene, polypropylene, nylon and vinyl chloride films which have excellent welding characteristics, are the preferably employed material for use as the above-noted sheet

- 11 -

from which the above-noted packaging material 3 is formed and, in this particular embodiment, a polyethylene film is employed. In addition, apart from the above-noted folding part 31, the three sides 32, 33, 34 of the above-noted packaging material 3 are sealed by heat sealing.

[0015] The above-noted packaging material 3 is formed as an hermetically sealed individual packaging bag 30 in the interior of which the disposable diaper 2 is enclosed, and this above-noted individual packaging bag 30 is formed in such a way that the compressed state of the disposable diaper 2 is maintained in the thickness direction thereof. The "compressed state of the disposable diaper maintained in the thickness direction" referred to here implies, without application of any external force on the disposable diaper, the maintenance of a reduced thickness state of the diaper compared to a diaper let stand in the atmosphere.

[0016] In a more detailed description thereof, the above-noted packaging material 3 is formed as the hermetically sealed individual packaging bag 30 by folding at the folding part 31 as shown in FIG. 3 and, in addition, the sealing of the three sides 32, 33, 34 as shown in FIG. 1.

[0017] In addition, the individual packaging of the above-noted disposable diaper 2 involves the folding and enclosing of the diaper in the interior of the above-noted individual packaging bag 30. At this time, the above-noted disposable diaper 2 is folded in the vertical direction along essentially the center

- 12 -

(2a as shown in FIG. 2) in the vertical direction (direction linking the waist side part 21 and the crotch part 23) thereof. As shown in FIG. 1, the length L_1 of the above-noted individual packaging bag 30 is approximately twice the length L_2 (length in the vertical direction) of the folded disposable diaper 2. This size allows for the diaper to be sealed in the packaging bag when it is to be disposed of following the use thereof.

[0018] In addition, the above-noted packaging material 3 employs a commonly used fastening tape 35 used for the fastening thereof when the diaper is to be disposed of following the use thereof. The above-noted fastening tape 35 is arranged in the approximate center section in the width direction of the individual packaging bag 30 formed from the above-noted packaging material 3 (direction opposing the width direction of the diaper).

[0019] The thickness ratio of the disposable diaper 2 in the above-noted packaging structure 1 is preferably 15 to 85%, and more preferably 40 to 60%. Ratios outside the above-noted range are undesirable because a thickness ratio less than 15% results in a worsening of the sense of hardness of the diaper, and a ratio in excess of 85% results in a reduction in the effect afforded by the diaper in terms of suppression of the restoration of thickness. The above-noted "thickness ratio" is determined as follows. That is to say, a "normal packaging structure in which a plurality of disposable diapers are packaged" was opened, and the thickness of a disposable diaper let stand for seven days at normal temperature and normal

- 13 -

humidity in the non-load state was measured (thickness of the folded diaper in this embodiment) and taken as 100. In contrast thereto, the thickness of the diaper of the "packaging structure" of the present invention (t shown in FIG. 1) is measured and indicated as a percentage thereof. It should be noted that the above-noted "thickness" refers to the thickness of a manufactured diaper with an absorbent body measured in the approximate center in the width direction thereof.

[0020] In addition, as shown in FIG. 1, a cutout notch 36 is provided in one edge 32 of the above-noted individual packaging bag 30 in such a way as to facilitate the easy opening of the individual packaging bag 30. In addition, in this embodiment, a sheet that is molecularly orientated in the uniaxial direction is employed as the packaging material 3 described above, and the above-noted cutout notch 36 is provided in the direction of molecular orientation. As a result, the direction in which the individual packaging bag 30 is torn and the direction of molecular orientation is the same and, accordingly, the opening of the individual packaging bag 30 is easier.

[0021] The use of the individual packaging structure 1 of this embodiment configured in this way involves the opening of the bag along the above-noted cutout notch 36 and the taking of the disposable diaper 2 out of the bag and, furthermore, the disposal of the diaper after removal from the wearer following the use thereof may involve the sealing of the diaper in the above-noted individual packaging bag 30 and the fastening

- 14 -

thereof using the above-noted fastening tape 35.

[0022] The configuration of the individual packaging structure 1 of this embodiment described above affords a restriction of the elastic restoration of the absorbent body of the diaper and, in addition, also restricts the elastic restoration with respect to the folding of the disposable diaper 2 which is folded in two. Accordingly, in a non-load state of the individual packaging structure 1, no increase (restoration) of the thickness of the disposable diaper 2 occurs while the diaper is sealed in the individual packaging bag 30 whereupon, accordingly, the diaper remains compacted and, in addition, it has excellent carriability. In addition, because the diaper can be hermetically sealed in the bag and disposed of following use as described above, hygienic disposal of the diaper is facilitated. This is particularly advantageous in the use of the diaper in the non-home location.

[0023] Next, a description will be given of a method for the manufacture of the individual packaging structure 1 of the present embodiment with reference to FIG. 4. Here, FIG. 4 is a schematic view showing the main part of a preferred method for the manufacture of the packaging structure of the disposable diaper of the present invention.

[0024] A sealing step is performed in the manufacture of the individual packaging structure 1 of this embodiment in which, following the covering of the above-noted disposable diaper 2 with the packaging material 3 as shown in FIG. 4, prescribed

- 15 -

positions of said packaging material 3 are sealed while air is expelled from the interior of the packaging material by the compression of said disposable diaper 2 with the packaging material 3, or while it is forcibly degassed. It should be noted that steps other than the above-noted sealing step, that is to say, the step for the manufacture of the disposable diaper 2, can be implemented without any particular restriction using commonly known methods.

[0025] In a more detailed description thereof, the above-noted sealing step can be implemented by the enclosing of the disposable diaper 2 folded in two within the packaging material 3 that has been folded in two along the folding part 31 and, while air is expelled from within the interior of the packaging material 3 and disposable diaper 2 by the application of force in the direction of the arrow of FIG. 4, that is to say, the thickness direction of the diaper using a compression roller or compression conveyor belt (not shown in the diagram), the sealing of the packaging material 3 by the sealing of the three sides 32, 33, 34 to form an individual packaging bag 30. Furthermore, the individual packaging structure 1 of a first embodiment of the present invention shown in FIG. 1 can be manufactured by the formation of the cutout notch 36 in accordance with normal methods, and the affixing of the fastening tape 35. That is to say, the above-noted "prescribed positions" for the above-noted sealing implies the perimeter section of the packaging material 3 that has not been sealed

- 16 -

and, in this embodiment mode, this implies the three sides 32, 33, 34 excluding the above-noted folding part 31.

[0026] Examples of the type of material able to be employed as the material from which the above-noted compression roller or compression conveyor belt is configured include iron, rubber, sponge and plastic. An example method for producing a strongly compressed individual packaging article involves, by way of example, the application of pressure by iron rollers of line pressure 10 to 20 kgf/cm with a clearance gap of 0.5mm.

[0027] In addition, the mode for the folding of the diaper of this embodiment is not restricted to the mode shown in FIG. 1. By way of example, as shown in FIG. 5, side flap sections 24 which constitute sections along the left and right sides of the waist part 21 and back side part 22 which do not comprise an absorbent body may be folded inward of the diaper. In addition, as is shown in FIG. 6, the diaper may be folded in the vertical direction in such a way that the cross-section thereof describes a W-shape.

[0028] In addition, the disposable diaper employed in the individual packaging structure of the present invention may be a disposable diaper of a so-called unfolding type as shown in FIG. 7. That is to say, a well-known unfolding-type disposable diaper that comprises a top sheet, a back sheet, and an absorbent body interposed between these two sheets, and in which elastic members are arranged in the waist part and the leg parts in a position in the perimeter edge of the absorbent body, can be

- 17 -

employed. The diaper in this case is preferably one in which, as shown in FIG. 7, side flap sections 24A that extend along the two sides of the absorbent body of the unfolding-type disposable diaper 2A are folded to the top sheet side and then folded in three in such a way as to form an essentially C shape. In addition, as shown in FIG. 8, the unfolding type disposable diaper 2A folded in three is preferably one that, in the same way as the individual packaging structure of the above-noted first embodiment, is enclosed and packaged within an individual packaging bag 30A to form an individual packaging structure 1A.

[0029] Although a loss of the shape of the folded non-individually packaged unfolding-type disposable diaper 2A occurs as a result of restoration of the folds due to, in the non-load state, the normal elastic restoration of the absorbent body or the elastic restoration of the constituent materials thereof or a contraction action of the elastic members, no loss of the compactness of the individual packaging structure 1A of this embodiment occurs. In addition, when a flat-type disposable diaper folded in three such as this is opened for use, because of the elastic member provided in the leg parts the diaper curves in a boat shape toward the sheet side. For this reason, the fittability thereof during wear is improved. Accordingly, the diaper has better fittability and better carriability.

[0030] A description of another embodiment of an individual packaging structure of the present invention is given below with reference to FIG. 9 and FIG. 10. It should be noted that the

- 18 -

description of this embodiment given below pertains to, in particular, the points of difference with the above-described first embodiment. For those points not described in particular detail the description given for the first embodiment described above shall have application as appropriate. Here, FIG. 9 is a perspective view showing a second embodiment of the individual packaging structure for a disposable diaper of the present invention. FIG. 10 is a perspective view showing a third embodiment of the individual packaging structure for a disposable diaper of the present invention.

[0031] The second embodiment shown in FIG. 9 differs to the first embodiment in terms of the size of the individual packaging bag 30. That is to say, as is shown in FIG. 9, the length L_1 of the above-noted individual packaging bag 30 of the individual packaging structure 1 of this embodiment is essentially equal to the length L_2 of the disposable diaper folded in two. In addition, a cutout notch 36 is provided in one side edge 34.

[0032] The third embodiment shown in FIG. 10 differs from the above-noted first embodiment in terms of the shape of the individual packaging bag 30 (sealed shape). That is to say, in the individual packaging structure 1 of this embodiment as shown in FIG. 10, the above-noted individual packaging bag 30 is sealed at the front and rear end edges 32', 33' and a center part 34' on one surface side in such a way as to form a pillow-type individual packaging mode. In this way, there are no

- 19 -

particular restrictions to the position for the sealing of the packaging material 3 (that is to say, to the sealing shape of the individual packaging bag 30). The effects afforded by the above-noted second and third embodiments are identical to those achieved by the above-described first embodiment.

[0033] It should be noted that there are no particular restrictions to the above-noted embodiments and, accordingly, various modifications may be made thereto within the scope that is not outside the gist of the present invention. By way of example, to facilitate easier opening, a perforation or similar may be provided instead of the above-noted cutout notch 36, or an opening cord may be additionally provided in the individual packaging bag 30. It should be noted that in these cases it is preferable that no waste material be generated as a result of the tearing of the packaging bag. In addition to the provision of the above-noted fastening tape 35 as a resealing means for use when the diaper is to be disposed of, resealing of the packaging bag when the diaper is to be disposed of can be achieved by the additional provision of an opening cord in the individual packaging bag 30, the coating of an adhesive or the like in advance, or the formation of the bag in a sized so allows it to be linkable with itself. In addition, the sealing of the above-noted individual packaging bag 30 can be implemented by, instead of heat sealing, impulse sealing or welding based on ultrasonic welding or high frequency welding, adhesion based on the use of an adhesive, or pressure

- 20 -

attachment. In addition, instead of the application of the above-noted pressure for degassing the air from the individual packaging bag structure in the manufacture of the individual packaging structure 1 of the present invention, the sealing can be implemented following the suctioning of air from within the individual packaging bag using a suction pump or the like. That is to say, replacing the compression and sealing steps pertaining to the above-noted preferred method of manufacture, the individual packaging structure of the present invention can be manufactured by a degassing and sealing step in which a sealing of the prescribed positions is performed following degassing resulting from the suctioning of air from within the packaging bag

[0034]

[Working Examples] Although a detailed description of the working examples and comparative examples of the present invention is given below, the present invention should not be regarded as being restricted thereto.

[0035] [Working Example 1] The disposable diaper employed was a common pants-type disposable diaper taken from a common compressed package article in which a plurality of pants-type diapers were compression packed, and a polyethylene film was employed as the packaging material. The disposable diaper taken from compressed package was immediately sealed within a packaging material and compressed at a compression load of 5 kgf/item to expel the air from the packaging material and,

- 21 -

furthermore, each edge of the packaging material was sealed by heat sealing (sealing step). It should be noted that the diaper was an individually packaged diaper folded in two, and the shape of individual packaging structure produced was the shape shown in FIG. 1. In addition, the compression was applied by, following the introduction of a single diaper (in the folded state) into an individual packaging bag configured from the packaging material, the loading of an acrylic plate on said individual packaging bag followed by the further loading thereon of a weight equivalent to the above-noted compression load. The changes over time in the thickness of the manufactured individual packaging structure obtained in this way were examined under normal temperature and normal humidity storage conditions. The results thereof are shown in FIG. 11. In addition, the thickness was measured using a dial gauge (manufactured by Mitsutoyo Co., Ltd. Code No. 575-113) and a stand (manufactured by Mitsutoyo Co., Ltd. Code No. 7002) (n=10).

[0036] [Working Example 2] Apart from the change in the compression load to 15 kgf/item, the individual packaging structure was produced in the same way as Working Example 1, and the changes over time in the thickness of the diaper were examined. The results thereof are shown in FIG. 11.

[0037] [Working Example 3] Apart from the change in the compression load to 25 kgf/item, the individual packaging structure was produced in the same way as Working Example 1, and

- 22 -

the changes over time in the thickness of the diaper were examined. The results thereof are shown in FIG. 11.

[0038] [Comparative Example 1] Apart from the fact that the individual packaging structure was not used, that is to say, apart from the fact that the diaper was used independently, the changes over time in the thickness of the diaper were examined in the same way as Working Example 1. The results thereof are shown in FIG. 11.

[0039] Here, the above-noted thickness ratios were 70% for Working Example 1, 60% for Working Example 2 and 55% for Working Example 3 and, as is clear from FIG. 11, no changes in thickness were observed in the diapers of the individual packaging structures of Working Examples 1 to 3 after seven days.

[0040]

[Effect of the Invention] The individual packaging structure for a disposable diaper of the present invention is compact and easily carried, is simple to put on and, furthermore, can be hygienically disposed of.

[0041] More specifically, (1) the individual packaging bag is blocked from external air, there is no presence in the surrounding environment of the air necessary for the restoration of the thickness of the absorbent body to occur and, accordingly, the absorbent body does not reach a thickness greater than a fixed thickness until the individual packaging bag has been opened. As a result, the individual packaging structure of the present invention is compact and has good

- 23 -

carriability even in the non-load state and, in addition, is easy for the wearer to put on and can be easily put on the wearer.

(2) The disposable diaper can be disposed of following use by sealing in the opened individual packaging bag and, as a result, the disposable diaper can be hygienically disposed of without discharge of odor to the exterior.

(3) Furthermore, because the diapers are individually packaged, very hygienic storage is possible and the hygienic carry thereof is possible and, in addition, because the exposure of the diapers to air is prevented, changes in color over time and deterioration of the performance of the product can be suppressed.

[Brief Description of the Diagrams]

[FIG. 1] FIG. 1 is a perspective view of a first embodiment of the individual packaging structure for a disposable diaper of the present invention;

[FIG. 2] FIG. 2 is a perspective view of the disposable diaper employed in the individual packaging structure shown in FIG. 1;

[FIG. 3] FIG. 3 is an unfolded view of the packaging material employed in the individual packaging structure shown in FIG. 1;

[FIG. 4] FIG. 4 is a schematic view showing the main part of the method for the manufacture of the individual packaging structure for a disposable diaper of the present invention;

[FIG. 5] FIG. 5 is a perspective view showing another example of a mode for the folding of the disposable diaper of the first

- 24 -

embodiment;

[FIG. 6] FIG. 6 is a perspective view showing another example of a mode for the folding of the disposable diaper of the first embodiment;

[FIG. 7] FIG. 7 is a perspective view of another example of the disposable diaper employed in the first embodiment;

[FIG. 8] FIG. 8 is a perspective view of a first embodiment of the individual packaging structure for a disposable diaper of the present invention in which the disposable diaper shown in FIG. 7 is employed;

[FIG. 9] FIG. 9 is a perspective view showing a second embodiment of the individual packaging structure for a disposable diaper of the present invention;

[FIG. 10] FIG. 10 is a perspective view showing a third embodiment of the individual packaging structure for a disposable diaper of the present invention; and

[FIG. 11] FIG. 11 is a graph showing the effects of the working examples and the comparative examples.

[Explanation of Symbols]

- 1 Individual packaging structure
- 2 Disposable diaper
- 21 Waist side part
- 22 Back side part
- 23 Crotch part
- 24 Side flap section
- 3 Packaging material

- 25 -

30 Individual packaging bag

31 Folding part

32 One side

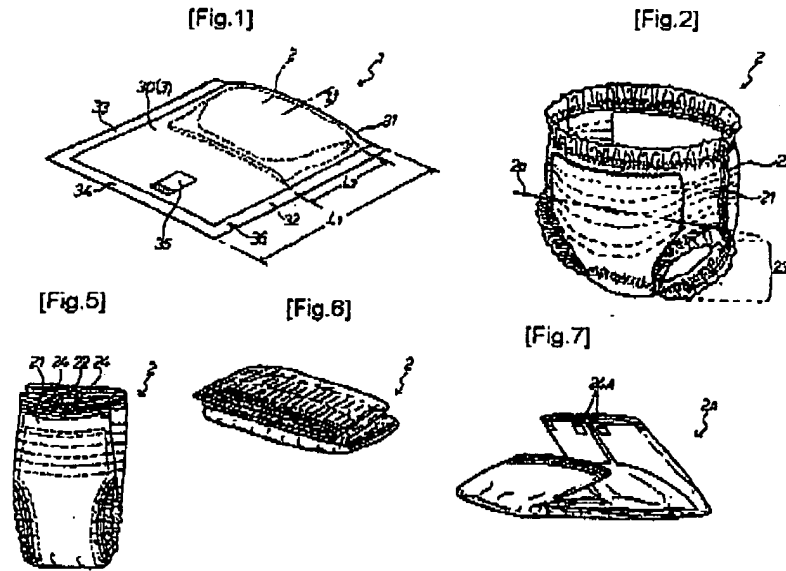
33 One side

34 One side

35 Fastening tape

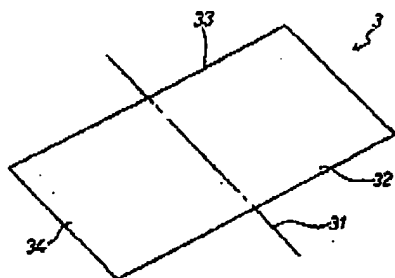
36 Cutout notch

- 1 -

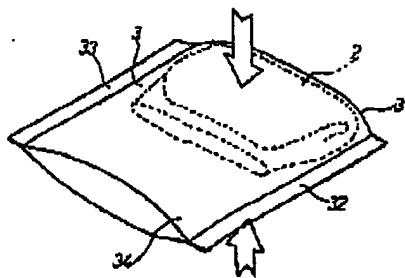


- 2 -

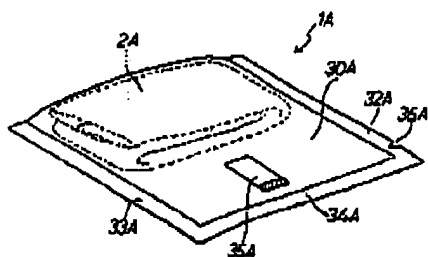
[Fig.3]



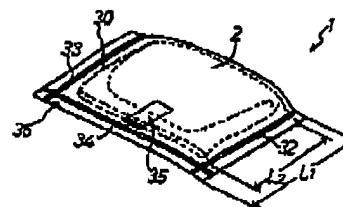
[Fig.4]



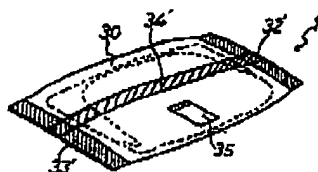
[Fig.8]



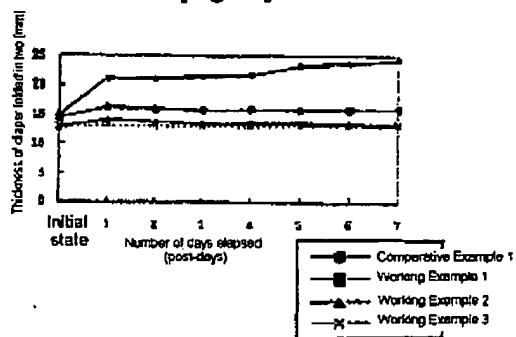
[Fig.9]



[Fig.10]



[Fig.11]



- 3 -

Translator's Report/Comments

Your ref: 10476643txtPS0071mbp Your order of (date): 28/01/2006

In translating the above text we have noted the following apparent errors/unclear passages which we have corrected or amended:

Page/para/line*	Comment
[0026]/1-3	'compression conveyor' → 'compression conveyor belt'.
[0032]/8-9	'above-noted second and fifth embodiments' → 'above-noted second and third embodiments'.

* This identification refers to the source text. Please note that the first paragraph is taken to be, where relevant, the end portion of a paragraph starting on the preceding page. Where the paragraph is stated, the line number relates to the particular paragraph. Where no paragraph is stated, the line number refers to the page margin line number.

TRC1 1.7.92